REMARKS

Claims 4, 5 and 8-19 are all the claims presently pending in the application. Claim 4 has been amended to more particularly define the invention. Claims 8-19 have been added to claim additional features of the invention. Claims 1-3, 6 and 7 have been canceled without prejudice or disclaimer.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 4-7 stand rejected under 35 U.S.C. §102(b) as being anticipated by Borsenberger et al. ("Organic Photoreceptors for Imaging Systems") (hereinafter "Borsenberger"). Claims 4-7 also stand rejected under 35 U.S.C. 102(b) as being anticipated by Kawanishi et al. (U.S. Patent Publication 2002/0022189) (hereinafter "Kawanishi").

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by exemplary claim 4) is directed to an image forming apparatus. The image forming apparatus includes an electrostatic charge bearing member that bears an electrostatic charge latent image thereon, an electrostatic charge image developing developer, a developing unit for supplying the electrostatic charge image developing developer to the electrostatic charge bearing member to visualize the electrostatic charge latent image as a toner image, a transferring unit for transferring the toner image formed on the electrostatic charge bearing member onto a recording medium, and a fixing unit for fixing the toner image onto the recording medium by applying at least a heat to the

recording medium that bears the toner image. The electrostatic charge image developing developer is formed by mixing an electrostatic charge image developing toner that includes at least a fixing resin and a hydrocarbon wax whose crystallinity is less than 93 % and whose melting point, which is defined as a maximum peak of the absorbed heat quantity curve at a time of temperature rise, is set in a range of 50°C to 120°C in a DSC curve measured by the differential scanning calorimeter into a carrier. When the electrostatic charge image developing developer is stirred for 24 hours at an atmospheric temperature that is lower than a glass transition point of the toner and is higher than 45 °C, an amount of maximum change in a quantity of charge of the electrostatic charge image developing toner is smaller than 20 μC/g and an amount of contamination of the carrier due to the electrostatic charge image developing toner less than 0.4 wt%. By using the electrostatic charge image developing developer, degradation of picture quality due to continuous printing is hard to occur.

The fixing performance of image forming toners for printers has been conventionally improved using low-melting temperature wax. However, if a low-melting temperature wax is employed, it is difficult to improve the fixing performance of a fine grain toner while also maintaining the heat resistance and the durability of the toner. Thus, it is difficult to provide a toner and an image forming apparatus that can be put into practical use.

The claimed invention of exemplary claim 1, on the other hand, provides an image forming apparatus that includes an electrostatic charge image developing developer, wherein the electrostatic charge image developing developer is formed by mixing an electrostatic charge image developing toner that includes at least a fixing resin and a hydrocarbon wax whose crystallinity is less than 93 % and whose melting point, which is defined as a maximum peak of the absorbed heat quantity curve at a time of temperature rise, is set in a range of 50°C to 120°C in a DSC curve measured by the differential scanning calorimeter into a carrier. By using the electrostatic charge image developing developer, degradation of

picture quality due to continuous is hard to occur (e.g., see Application at page 8, line 20 through page 9, line 17). This feature is important for providing an image forming apparatus including a toner that is excellent in heat resistance and durability and is capable of reducing an energy required for fixing (see Application at page 8, lines 2-5).

II. THE PRIOR ART REFERENCES

A. The Borsenberger Reference

The Examiner alleges that Borsenberger teaches the claimed invention of claims 4-7. Applicants submit, however, that Borsenberger does not teach or suggest each and every feature of the claimed invention.

That is, Borsenberger does not teach or suggest that "*wherein by using the electrostatic charge image developing developer, degradation of picture quality due to continuous printing is hard to occur*" as recited in claim 4.

The Examiner attempts to rely on Figures 4, 5 and 7 of Borsenberger to support his allegation. The Examiner, however, is clearly incorrect.

That is, nowhere in these figures (nor anywhere else for that matter) does Borsenberger teach or suggest that by using the electrostatic charge image developing developer, degradation of picture quality due to continuous printing is hard to occur. Indeed, the Examiner does not even allege that Borsenberger teaches or suggests this feature. The Examiner merely relies upon Borsenberger as teaching a conventional imaging apparatus.

The present invention is a result of investigating the relationship between change in physical properties of a developer and degradation of picture quality, when the developer includes a mixture of a toner and a carrier, taking into consideration heat resistance and durability of the toner, which are problematic when the fixing performance of toner is improved with the conventional configuration of toner as above, and further taking into

consideration the degradation of lifetime of the developer caused by the carrier contaminated by the toner. The investigation finally finds that "degradation of picture quality due to long-term continuous printing is hard to occur" in an image forming apparatus including: an electrostatic charge bearing member that bears an electrostatic charge latent image thereon; an electrostatic charge image developing developer; a developing unit for supplying said electrostatic charge image developing developer to the electrostatic charge bearing member to visualize the electrostatic charge latent image as a toner image; a transferring unit for transferring the toner image formed on the electrostatic charge bearing member onto a recording medium; and a fixing unit for fixing the toner image onto the recording medium by applying at least a heat to the recording medium that bears the toner image" when the developer had the following properties: "when the developer is stirred for 24 hours at an atmospheric temperature that is lower than a glass transition point of the toner and is higher than 45°C, an amount of maximum change in a quantity of charge of electrostatic charge image developing toner is smaller than 20μC/g and an amount of contamination of the carrier due to the electrostatic charge image developing toner less than 0.4wt%" (see Application at page 20, line 18 through page 21, line 17).

This feature is not recognized by Borsenberger.

Therefore, Applicants submit that Borsenberger does not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

B. The Kawanishi Reference

The Examiner alleges that Kawanishi teaches the claimed invention of claims 4-7. Applicants submit, however, that Kawanishi does not teach or suggest each and every feature of the claimed invention.

That is, Kawanishi does not teach or suggest that "*wherein by using the electrostatic charge image developing developer, degradation of picture quality due to continuous printing is hard to occur*" as recited in claim 4.

The Examiner attempts to rely on Figure 1 and paragraph [0133] of Kawanishi to support his allegation. The Examiner, however, is clearly incorrect.

That is, nowhere in these figures (nor anywhere else for that matter) does Kawanishi teach or suggest that by using the electrostatic charge image developing developer, degradation of picture quality due to continuous printing is hard to occur. Indeed, the Examiner does not even allege that Kawanishi teaches or suggests this feature. The Examiner merely relies upon Kawanishi as teaching a conventional imaging apparatus.

The present invention is a result of investigating the relationship between change in physical properties of a developer and degradation of picture quality, when the developer includes a mixture of a toner and a carrier, taking into consideration heat resistance and durability of the toner, which are problematic when the fixing performance of toner is improved with the conventional configuration of toner as above, and further taking into consideration the degradation of lifetime of the developer caused by the carrier contaminated by the toner. The investigation finally finds that "degradation of picture quality due to long-term continuous printing is hard to occur" in an image forming apparatus including: an electrostatic charge bearing member that bears an electrostatic charge latent image thereon; an electrostatic charge image developing developer; a developing unit for supplying said electrostatic charge image developing developer to the electrostatic charge bearing member to visualize the electrostatic charge latent image as a toner image; a transferring unit for transferring the toner image formed on the electrostatic charge bearing member onto a recording medium; and a fixing unit for fixing the toner image onto the recording medium by applying at least a heat to the recording medium that bears the toner image" when the

developer had the following properties: "when the developer is stirred for 24 hours at an atmospheric temperature that is lower than a glass transition point of the toner and is higher than 45°C, an amount of maximum change in a quantity of charge of electrostatic charge image developing toner is smaller than 20μC/g and an amount of contamination of the carrier due to the electrostatic charge image developing toner less than 0.4wt%" (see Application at page 20, line 18 through page 21, line 17).

This feature is not recognized by Kawanishi.

Therefore, Applicants submit that Kawanishi does not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. NEW CLAIMS

New claims 8-19 have been added to provide more varied protection for the claimed invention and to claim additional features of the invention. These claims are independently patentable because of the novel features recited therein.

Applicants respectfully submit that new claims 8-19 are patentable over any combination of the applied references at least for analogous reasons to those set forth above with respect to claims 4 and 5.

IV. FORMAL MATTERS AND CONCLUSION

Regarding the Examiner's objection to claims 6 and 7, Applicants respectfully submit that claims 6 and 7 have been canceled, thus rendering the Examiner's objection moot.

Regarding the Examiner's objection to the oath or declaration, Applicants respectfully submit that the originally filed declaration is not defective. That is, the originally filed declaration clearly identifies the mailing address of each inventor, the citizenship of each

inventor and the residence of each inventor. Applicants have included herewith a copy of the original filed declaration, along with a copy of the date stamped post card filing receipt, for the Examiner's convenience.

In view of the foregoing, Applicants submit that claims 4, 5 and 8-19, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: August 4, 2005

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New Application Post Card Filing Receipt and Request for Early Notification of Serial Number

Attorney's Docket Number: H64754-708SH/ ☒ Patent ☐ Trademark
Applicant's Name: KAWANISHI, et al. Application Filing Date: 9/17/03
Title: Electrostatic Charge Image Developing Developer And Image Forming Apparatus Using the Same

Papers Filed Herewith:

49 Pages Specification, Claims and Abstract 5 Total Claims 2 Independent Claims

1 Sheets ☒ Formal Drawings (Figs. 1-2) ☐ Informal Drawings ☐ Priority Document(s)

☒ Patent Application Transmittal Sheet ☒ Declaration/Power of Attorney

☐ IDS ☐ 1449 Form w/ ___ Documents ☐ Assignment ☐ Recordation Cover ☐
Other _____

Fees Filed Herewith: $ 750.00 ☒ Check ☐ Charge Deposit Account: _____
Check # 9839